

## FREQUENCY OF THYROID DYSFUNCTION IN HEALTHY PREGNANT WOMEN

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**ABSTRACT... Objective:** To investigate the frequency of thyroid dysfunction in healthy women during pregnancy. **Study Design:** Descriptive cross sectional study. **Place and Duration of Study:** Department of Gynecology and Obstetrics Unit 1, Nishtar Hospital, Multan from 6-1-2016 to 6-7-2016. **Methodology:** It was a descriptive cross sectional study done in Department of Gynaecology and Obstetrics Unit 1 Nishtar Hospital and included 451 pregnant women. The participants who were found to have some abnormality in TSH were further evaluated for levels of T3 and T4. The outcome variable that is frequency of thyroid dysfunction was recorded by researcher on performa. All the data was analyzed by using SPSS-23. **Results:** The Mean age of the study participants was  $27.87 \pm 4.76$  years. The Mean parity was  $2.88 \pm 0.99$  and Mean gravidity was  $3.96 \pm 0.95$ . Most of expecting ladies 307 (68.1%) were at parity of 1–4. The Mean Value of gestational age of participants was  $20.25 \pm 4.30$  weeks with minimum of 13 weeks and maximum of about 26 weeks. 90 (20.0%) cases were found to be Euthyroid. There were 94 (20.8 %) cases of subclinical hypothyroidism and 54 (12.0%) cases of subclinical hyperthyroidism. **Conclusion:** The frequency of thyroid problems is alarmingly high according to results of our study.. Subclinical hypothyroidism was found to have marked association with increasing age of mother, high parity of mother, and gestational age

**Keywords:** Thyroid dysfunction, Subclinical hypothyroid, Euthyroid

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### INTRODUCTION

Thyroid dysfunction is one of the common diseases in pregnancy and has marked impact on both mother and fetal outcomes. Pregnancy is state leading to a number of variations in thyroid function. These changes are due to a number of factors including an increase of thyroxine-binding globulin (TBG), raise in levels of estrogen and human chorionic gonadotropin (hCG), increased renal losses of iodine due to higher or improved glomerular filtration rate, changes in the requirement and utilization of thyroid hormones in peripheral parts of maternal body, and variations in iodine transmission through placenta to fetus. 1Pregnancy can lead to 10% increase in size of thyroid gland in ladies living in areas having sufficient sources for iodine and in iodine poor countries increase in thyroid size is much greater. During pregnancy both production of thyroid hormones and iodine requirement increases by about 50%. Pregnancy becomes a stress test for the function of thyroid gland, and those having low

stores of iodine or having borderline iodine deficiency develop hypothyroidism. 2 Hyperthyroidism develops rarely in pregnancy (0.1–0.4% of pregnant women). About 2–3% of expecting mothers have hypothyroidism (having suboptimal function of thyroid gland), of these a smaller number i.e 0.3–0.5% have severe hypothyroidism and 2–2.5% fall in category of subclinical hypothyroidism. 3 5–10% of hypothyroid women have anti-thyroid antibodies and are vulnerable to suffer from insufficient functioning of thyroid gland during pregnancy. 4 Some of the commonly occurring problems with thyroid gland during pregnancy and post-partum period include thyrotoxicosis, recurrent postpartum thyroiditis and maternal hypothyroidism. 5 Hashimoto's thyroiditis is most commonly occurring thyroid issues in areas where iodine is sufficient while Goitre is most commonly found thyroid problem in areas which are deficient in iodine. The results of a study conducted in Lahore shows that 79.8% of expecting mothers

suffer from iodine insufficiency; this is an alarming situation as it can have highly morbid effects on both mother and fetus both during and after pregnancy. Pakistan is an iodine deficient country as iodine deficiency exists in many of the regions) and the staple diet is also iodine deficient. This makes the Pakistani population especially the expecting ladies vulnerable to become moderate to severely iodine deficient which in return has devastating effects on mother and fetus<sup>7</sup>. No local study was conducted in our region before on this topic, so we planned this study to fulfill the local reference gap.

**METHODOLOGY**

It was a descriptive cross sectional study done in Department of Gynaecology and Obstetrics Unit 1 Nishtar Hospital and included 451 pregnant women. Patients of age 20 to 40 years with Singleton pregnancy confirmed by ultrasonography and gestational age 13 to 26 weeks (based on calculation from first day of last menstrual period), were enrolled in study. Expecting mothers with other medical diseases e.g thyroid disease, raised BP, diabetes mellitus, multiple pregnancies were excluded from our study. Four hundred fifty one healthy expecting ladies who satisfied the inclusion and exclusion criteria and were booked in Out Patient Department of Nishtar Hospital Multan were made part of the study. Informed consent was taken from participants and measures were taken to maintain confidentiality. Detailed history was taken and after carrying out examination; TSH levels were evaluated of all participants of study. The participants who were found to have some abnormality in TSH were further evaluated for levels of T3 and T4 (from Central Laboratory of Nishtar Hospital Multan). The outcome variables that are frequency of thyroid dysfunction were recorded by researcher on performa. All the data was assessed by using SPSS-20.

**RESULTS**

The study included 451 healthy expecting mothers who fulfilled inclusion criteria. Mean age of participants was found to be  $27.87 \pm 4.76$  years (with 21 years as minimum age while maximum age was 37 years). Our study results have revealed that most of our participants i.e. 289 (64.1%) were of

ages between 20 - 30 years (Table. 1). Mean Parity of participants was  $2.88 \pm 0.99$ , the results of study reveal that most of our participants i.e. 325 (72.1%) were at parity of 3 or less than 3 (Table. 2).

Mean gravidity of participating ladies was  $3.96 \pm 0.95$ , and results have shown that most of these expecting ladies i.e. 307 (68.1%) were at parity of 1–4. Mean gestational age of participants was  $20.25 \pm 4.30$  weeks (with minimum duration of pregnancy of 13 weeks while maximum period of pregnancy of 26 weeks). Results have explained that most of these expecting mothers i.e. 252 (55.9%) presented with gestational age between 21–26 weeks (Table. 3). Ninety 90 (20.0%) of our participants were found to be euthyroid, 94 (20.8 %) participants were having I hypothyroidism and subclinical hyperthyroidism was present in 54 (12.0%) of participants (Table. 4).

**Table-1**

**Age distribution of study cases.  
(n = 451)**

Age Groups	Frequency	Percentage
20 – 30 Years	289	64.1
31 – 40 Years	162	35.9
Total	451	100

**Table-2**

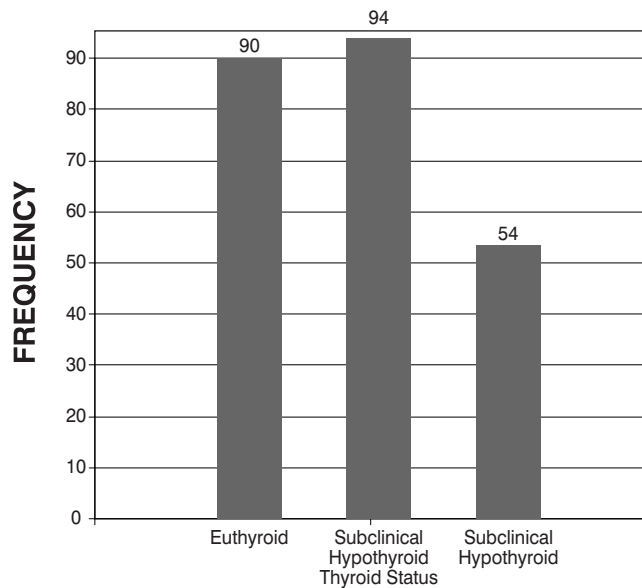
**Parity distribution of study cases.  
(n = 451)**

Parity	Frequency	Percentage
Equal or less than 3	325	72.1
More than 3	126	27.9
Total	451	100

**Table-4**

**Gestational age of study cases.  
(n = 451)**

Gestational age	Frequency	Percentage
13 – 20 weeks	199	44.1
21 – 26 weeks	252	55.9
Total	451	100



**DISCUSSION**

Evaluation of thyroid functions during pregnancy is crucial for health of expecting lady during pregnancy, outcome of pregnancy, and pre and post-natal development of the child. Hypothyroidism is among one of the highest frequent thyroid ailment during pregnancy. It can result into miscarriage, separation of placenta from wall of uterus, preeclampsia, delivery before term and reduced intellectual function of conceived fetus in later life. Hypothyroidism has markedly variable prevalence during pregnancy across different geographical areas of the world. It has got prevalence of 2.5% in the west and about 11% in the areas of subcontinent. Studies also provide evidence that prevalence of hypothyroidism is found to be much more in Asian countries as compared to the western regions. Thyroid gland of fetus starts functioning at twelve weeks of gestation and before that i.e. upto eleven weeks of gestation, fetus is totally dependent upon maternal thyroid hormone for carrying out developmental functions. Consequently hypothyroidism of mother in early stages of pregnancy results in reduced availability of thyroid hormone to the fetus and can lead to abnormal or reduced brain development, and increases the risk of miscarriage, congenital anomalies, death during birth and still-birth. Hyperthyroidism has got much less prevalence as compared to hypothyroidism. Its prevalence is 0.5–2/1000 pregnancies and untreated and undiagnosed Hyperthyroidism can

be a source of dreadful consequences like pre-eclampsia, pre-term birth, and death of baby during labour. Sub-clinical hyperthyroidism (suppressed thyroid-stimulating hormone [TSH] alone) is seen in around 1.7% of pregnant mothers and no adverse consequences have been reported yet by studies. Hence the need of the hour is to detect and starting therapy for thyroid disease as early as possible in pregnancy to avoid dreadful outcomes. In our study, mean age of participants is  $27.87 \pm 4.76$  years (with minimum of 21 years and maximum of 37 years). Results of the study show that most of participants i.e. 289 (64.1%) were of age between 20–30 years. Mean parity of participants was found to be  $2.88 \pm 0.99$ , results revealed that many of participants i.e. 325 (72.1%) were at parity of 3 or less than 3. Mean number of children possessed by mother was  $3.96 \pm 0.95$ . Results revealed that most of these expecting mothers i.e. 307 (68.1%) were at parity range of 1–4. Mean period of pregnancy was  $20.25 \pm 4.30$  weeks (with minimum period of pregnancy of 13 weeks to maximum period of pregnancy of 26 weeks). The results concluded that most of the expecting mothers i.e. 252 (55.9%) were at gestational age of 21–26 weeks. As already discussed dysfunction of thyroid gland can lead to preterm birth, hypertension during pregnancy, increased risk of fetal death, and low weight of infant at birth. Maternal hypothyroidism and hypothyroxinemia if occurs during first three months of gestation is extremely dangerous as it leads to reduced growth and development of fetal brain and mental retardation in later life. Due to serious adverse consequences related to hypothyroidism and because of the reason that these can be avoided by prompt diagnosis and early initiation of treatment, some experts advice to make screening of thyroid essential and basic investigation in early pregnancy. But the Endocrine Society Clinical Practice Guideline suggests screening of high risk ladies during pregnancy including those having a self or family history of thyroid problem, ladies having type 1 DM, having some other autoimmune dysfunction or positive clinical signs for thyroid disorders, radiation exposure to head and neck region, history of miscarriage or infertility.

For a long period of time reference level of TSH in pregnancy remained a source of discussion. In 2002, National Academy of Clinical Biochemistry (NACB) had set recommendations for TSH levels. 1890 (20%) of participants were found to be euthyroid, hypothyroidism was seen in 94 (20.8%) and subclinical hyperthyroidism was present in 54 (12.0%) of our study cases. Rajput et al<sup>19</sup> from India reported 75% euthyroid, 21.5% sub-clinical hypothyroidism and 3.3% sub-clinical hyperthyroidism amongst screened pregnant women. These findings are almost same as in our study. A study done by Altomare et al<sup>20</sup> has almost same results as our study. Wang et al<sup>21</sup> from China documented very high frequency of thyroid disease among pregnant ladies which is also similar to results of his study. All the data was assessed by using SPSS-20.

## CONCLUSION

Our study shown high number of expecting ladies to be suffering from thyroid disease. A significant association has been noted between Subclinical hypothyroidism and increasing age of pregnant lady, high parity and gestational age. From results of our study i.e very high frequency of thyroid disease during pregnancy we have come to the conclusion that each and every expecting lady should be screened for thyroid disease early in pregnancy especially those having high risk for thyroid disease (as already mentioned). This step will help to prevent fetus from problems like mental retardation, low birth weight and death during birth and hence will improve quality of life of mothers and their new born children.

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